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ABSTRACT

This report describes a project designed to provide a cost effective centralized data collection, analysis, and retrieval system to handle all data on adult basic education (ABE) clients and staff personnel for all adult learning sites in Massachusetts for reporting, research, and evaluation purposes at local and State levels. This report is divided into five sections: Statement of the Problem; Goals of the Project; Relevant Research; System Design, which presents two exhibits explaining the management information system (MIS) model followed in the design, implementation, and evaluation of a Massachusetts field research project which has been implemented at all 30 learning centers in Massachusetts; and Project Overview, which describes (1) use of standardized data collection forms for student registration and reinstatement, student advancement, student separation from an ABE program, and student attendance, (2) training of staff in use of the system, and (3) several reports generated by the system. A bibliography is appended. (SH)

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MASSACHUSETTS ADULT BASIC EDUCATION

MANAGEMENT INFORMATION SYSTEM

WORKING PAPER NO. 1

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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COORDINATOR OF FIELD RESEARCH

20 NOVEMBER 1976

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I STATEMENT OF THE PROBLEM

The General Accounting Office (1975) has criticized the national Adult Basic Education effort for lack of available and reliable data on ABE programs. They have recommended that the Office of Education direct efforts toward gathering and reporting data on program functioning in a timely and accurate fashion.

The Massachusetts State Department of Education, Bureau of Adult Services, has witnessed an increase in reporting requirements in response to a need for greater program accountability and timely and accurate reporting. Additionally, the Bureau has experienced a need for a data base composed of all program data suitable for both reporting and research purposes.

In response to increasingly demanding requests for reports from federal agencies, state agencies, referral agencies, and local educational agencies, learning centers and sites involved in the Adult Basic Education effort have spent a greater proportion of their time in record keeping and data collection activities. Although learning sites feel that their primary mission is the delivery of services to clients, they have found themselves engulfed by paperwork and thus diverted from their fundamental mission.

Both the Bureau of Adult Services and ABE learning sites have experienced a need for relevant research to be applied to increasingly sophisticated program demands. These research demands would include: research on financial modeling and projection of the current ABE grant; research on other possible sources of funding; research on adult education legislation; research on other learning center and site needs. Pertinent research, disseminated throughout the Massachusetts ABE network, would strengthen and promote program continuity and unity. Additionally, such research would insure the continuation of the leadership role which the program has nationwide.

II GOALS OF THE PROJECT

1. To provide a cost effective centralized data collection, analysis, and retrieval system to handle all data on ABE clients and staff personnel for all adult learning sites in Massachusetts for reporting, research, and evaluation purposes.

2. To provide a management information system capable of handling information on all students and staff throughout the State which would serve as an invaluable management and research tool for local,state, and federal agencies, as well as for operational learning sites.

3. To provide appropriate information at necessary points for decision making by local program managers, and the state agency.

4. To respond to the GAO report by providing accurate and timely data in an effective reporting format.

5. To establish a system for local program accountability.

6. To conduct relevant and timely research for the Bureau of Adult Services and ABE local programs as deemed necessary by the State office and local sites.

III. RELEVANT RESEARCH

Problems related to information, whether this be collection, storage, communication, manipulation, analysis, retrival and application of information are involved in every educational situation. The mandate for American education in the 80's is clear:

> The continued use of antiquated information processing procedures in the face of growing size and complexity of American education is in large measure an information processing system. The right data at the right moments give teachers and administrators the edge they need for making calculated rather than uninformed decisions. Wisdom and information are a powerful team. Computers can provide the information, educators must provide the wisdom. (Goodlad, O'Toole and Tyler, 1966)

Computer use and growth in the educational sphere have been comparable to that within the business world. The expansion of the computer use in the last five years within the secondary school setting is reflected in Exhibit 1, taken from a paper presented at a 1975 conference on educational computer applications. Gains are reflected in both administrative and instructional uses of the computer, although administrative growth has been much greater. Also, educational data processing applications in the administrative area are far more familiar and have had direct models in the business world.

Administrative computer applications or management information systems are a common phenomenon in the business world. MIS develop in response to the needs of management for accurate, timely, and meaningful data to plan, analyze, and assist in the control of the organization's activities. A MIS has several objectives:

1. to provide timely information to management
2. to aid in the distribution of resources
3. to aid in the selection of alternatives.

By the mid 70's, computer technology has advanced to the point where the needs of most educational administrators in the area of information retrieval con be met. The tremendous gap often perceived by educators between technological potential and delivery is a result of two problems: 1. a lack of conceptualizing educational functions and operations into a comprehensive information management system and 2. the absence of trained professional educators and support personnel to apply existing computer technology to solve information problems. The purpose of this paper is to suggest that the gap between technological potential and delivery is being bridged.

Exhibit 1

"COMPUTER APPLICATIONS IN SECONDARY EDUCATION"

Secondary School Survey

	1970	1975
Secondary Schools Using Computers	34.4%	52.7%
(Admin. only)	21.5%	29.5%
(Instruc. only)	3.9%	4.5%
(Both Admin. & Instruc.)	9.0%	18.7%
Nonusers	65.5%	47.3%

(Korotkin & Bukoski in Green, editor, 1975.)

The national Adult Basic Education endeavor has come under increasing scrutiny in terms of accountability for delivery of services. The General Accounting Office in its 1975 report to Congress commented upon: "statistics compiled at the local program level, and ultimately reported to the Office of Education and summarize nationally, which have been unreliable and have overstated program accomplishments." The General Accounting Office recommended strongly that program reporting data be improved. (GAO, 1975)

Requests by the USOE for improved data collection, coupled with increasingly complex and demanding reporting forms, and stress on accountability have prompted some states to use a computerized data collection, analysis, and retrieval system coupled with overall improved management information systems. Using responses to a brief survey letter sent by the author to federal regional officers and then to state administrators of ABE programs, the author found the following:

-Several states have used the computer for research purposes notably in the area of statewide needs assessments of potential adult education audiences and of adult educators.

-Four states (Arizona, Massachusetts, Texas and Wisconsin) are using computer analysis for all aspects of data required for annual federal performance report and for data of interest to state agencies.

-One state (Rhode Island) is using the computer for analysis and reporting performance data on clients.

-One state (Arkansas) is using the computer to analyze data on adult education staff.

-Several states expressed interest in future computerization of data collection.

Reasons for computerization of program data as expressed by the responding states included: need for a comprehensive, easy method for generating reliable accurate data on program participants; needs for a system to handle voluminous data; need for program information in a timely and understandable fashion.

To summarize the findings of this informal survey:

1. All states currently engaged in computerized data collection, analysis, and retrieval are using centralized data collection, batch mode, and standardized collection forms for all sites.
2. Batch mode is currently the most cost effevtive computer application for handling administrative data.
3. Most states have collected not only data required for federal reporting but also data which could suuplement research efforts by the state agency.
4. The focus of data collection, analysis, and retrieval efforts has been the state agency and the leadership the state agency has provided in this effort.

In 1968 and 1969, the state of Arizona pioneered a data processing system for Adult Basic Education. The program aimed at information gathering and reporting on: administrative and teaching staff, student enrollment, dropouts, curriculum data, project financial data. Using preprinted forms with tear-out carbons forwarded to the Research Coordinating Unit on a monthly basis, substantial research and evaluation data was gathered for program monitoring and change. In 1969, a progress report on the project remarked on some system problems in need of correction, but noted several achievements including: considerably more data being available than a hand system, program results analyzed in monthly summaries, possibilities of total program evaluation, and timely summary tabulations available for the state office suitable for program monitoring.

Monthly, Rhode Island collects student registration and attendance data from all ABE projects within the state. Data is keypunched and computerized to provide the state agency with bimonthly reports and generate the annual federal report.

A two year (1974-1976) 309 project in Massachusetts explored possible administrative and instructional computer applications. Seven learning centers used the capabilities of a time-sharing computer in Springfield to handle student record keeping. One center also used a computer managed instructional system which was under development at the other centers. As a result of this two year experience, learning centers on the network expressed a strong interest in continuing the administrative application. (Paeschke, 1976)

IV SYSTEM DESIGN

Exhibits 3 and 4 explain the system model followed in the design, implementation, and evaluation of the Massachusetts Field Research project. Currently, the project has been implemented at all 30 learning sites in Massachusetts.

Currently, the project has been implemented at all 30 learning centers in Massachusetts. Training has been conducted regarding use of the forms and interpretation of the program reports. Evaluation of the information system and revisions in the system are underway.

Exhibit 3

SYSTEM DESIGN OF A STATEWIDE ABE COMPUTERIZED
DATA COLLECTION, ANALYSIS, AND RETRIEVAL SYSTEM

I. CONCEPTION

1. Goal Setting - establish goals of federal, state, and local agencies for project.

II. RESEARCH

1. Gather reporting forms and reporting requirements of federal agency, state agency, local agency, and individual learning sites.
2. Research similar systems in industrial and educational setting.
3. Determine information sought for reporting purposes.
4. Determine time requirements for reporting.
5. Research most cost effective approach to data analyis and report writing.

III. DECISION

1. Decide on most cost effective computer system for data analysis and retrieval requirements.

IV. DESIGN

1. Design computer configuration for data analysis and retrieval.
2. Design personnel and staffing requirements necessary for implementation of the application.
3. Design system flow including data collection procedures, report generation, and report dissemination procedures.

V. DECISION

1. Decide on adequacy of design.
2. Decide on suitable computer facility with appropriate hardware and software for computer application. (Most likely this decision will be based on competitive bidding.)

VI. DEVELOPMENT

1. Develop data gathering instruments.
2. Develop collection procedures for instruments.
3. Develop dissemination procedures.
4. Develop computer documentation.

Exhibit 3 cont'd

VII. TESTING

1. Computer program debugging.
2. Field Test instruments at selected sites.
3. Field Test data collection procedures at selected sites.
4. Field Test reports and dissemination procedures at selected sites.
5. Obtain feedback from local, state, and federal agencies.

VIII. IMPLEMENTATION

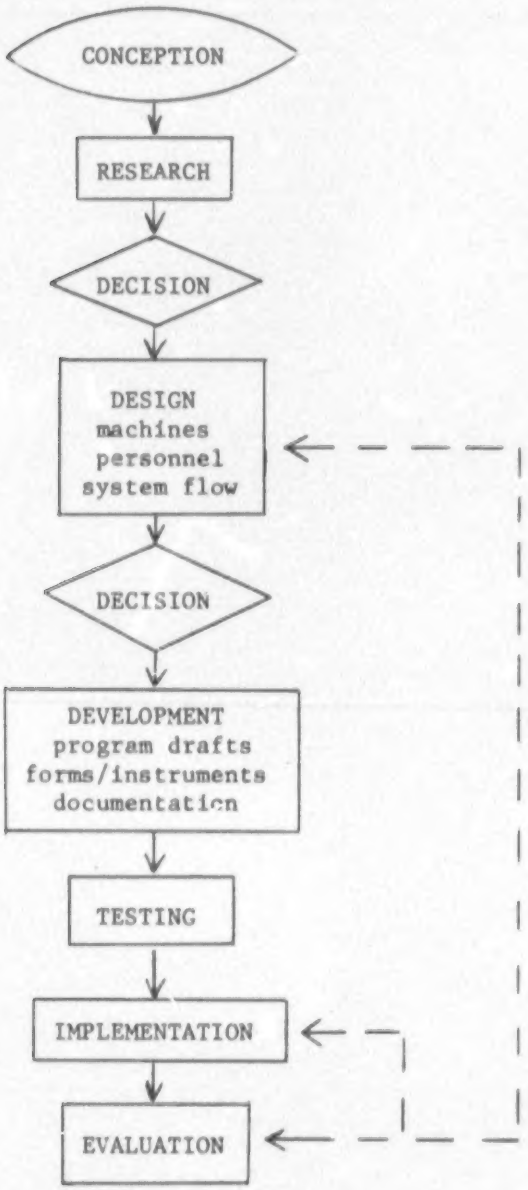
1. Implement data collection, analysis, and retrieval system for all sites.
2. Implement staff development needed to maintain the system.

IX. EVALUATION

1. Evaluate system design.
2. Evaluate system implementation.
3. Evaluate report collection and generation.

Exhibit 4

FLOWCHART SHOWING COMPUTERIZED
DATA COLLECTION, ANALYSIS, AND RETRIEVAL SYSTEM



PROJECT OVERVIEW

Standardized data collection forms are supplied by the project including student registration, advancement, separation, and attendance forms. These are collected by mail every month on a set schedule. Registration and separation forms may be mailed in throughout the month, but no later than by the 5th working day of the next month. Monthly reports based on collection of attendance, registration, separation, and advancement materials will be sent to the centers by the 9th working day of the month.

All forms are mailed to the research area. Forms are then keypunched to provide a computer readable medium suitable for processing. Computer programming, processing, and storage is provided by Control Data Corporation which successfully responded to a request for proposal. Two data bases are maintained: an extensive student data base consisting of registration and attendance information and a staff data base. Control Data Corporation's data base management system is used to provide a cost-effective, easily manipulated, and readily accessible retrieval system.

Designated reports based on collected data will be generated monthly by site, quarterly by site for the entire state, and annually by site and for the entire state. Distribution of reports is accomplished through United Parcel Service.

Training for the system consists of:

1. Initial training meetings during the months of June and September.
2. On-site training for the first data collection of registration.
3. On-going system support throughout the year. The research coordinator will be continually available and prepared to handle questions and problems which arise regarding the new system. Close cooperation is maintained bwteen the coordinator of field research and Control Data Corporation.

PROJECT OVERVIEW
STUDENT REGISTRATION AND REINSTATEMENT

Student registration for each ABE student will consist of one standardized registration form.

Each student will be identified by unique student identification number. Where possible, this number will be the student's social security number. In the case of students who lack a social security number, this number will consist of:

AAA-2 Digit Program number-program assigned 4 digits.
AAA-30-0002

In the case of students already assigned a student number and when the social security number has not been collected, the student number will consist of:

BBB-2 digit program number-already assigned 4 digits.

Each ABE program will be identified by unique assigned 2 digit project number.

Upon entrance to the program, the registration form will be completed for each student. The forms are in duplicate. The original top sheet will be mailed to the research area. The duplicate will be retained by the program to serve as a permanent registration record.

If the registration information changes or requires correction, a new registration form should be completed with only the changed or corrected information entered on the form.

Program reinstatement will be accomplished by filling in the student number, program number, and checking the indicated box for reinstatement.

When a sufficient number of registration, reinstatement and separation forms have been collected by the program, these forms should be grouped and mailed to the research area at mid-month. They must be received by the 5th working day of the next month.

PROJECT OVERVIEW
STUDENT ADVANCEMENT

Information on student status may be changed by using a student advancement form which when completed is mailed to the research area. This will automatically update information on the student's record. This form is designed to capture student progress.

PROJECT OVERVIEW
STUDENT SEPARATION

Each ABE student who separates from the program will be identified by completion of a student separation form. The student's record is still available in computerized form, but has inactive status. On the form, the student will be identified by the same student identification number and by 2 digit program number.

The top copy will be mailed to the research area and the other copy will be retained by the individual programs as a permanent copy.

PROJECT OVERVIEW
STUDENT ATTENDANCE

Attendance sheets will be generated by the computer for each project. Two copies will be printed. These sheets will be completed by the program for each student's attendance during the month. One overall goal in terms of program accountability is to collect the number of hours per month a student attends.

Attendance by student will be entered giving a total monthly hours in the right hand column of the grid. If the student separates during the month, the appropriate block on the right will be checked. Note: a copy of a separation form should be completed on the student at that point. Students new during the month will be entered by printing the student's ID number, name, and attendance information at the bottom of the sheet.

One completed attendance sheet will be mailed to the research area by the 5th working day of the month. Two new attendance rosters for the next month will then be generated by the computer adding alphabetically those new students and deleting those separated students.

REPORTS

Several reports are to be generated by the system. These reports are summarized in the next several pages. Reports are based on 3 sources of collected data: 1. Registration forms; 2. Attendance forms, 3. Separation forms. All reports are designed to provide relevant and timely information for program managers suitable for program monitoring. With these reports, emphasis is put on: participation patterns, retention efforts, and inactivation patterns.

A Monthly report will be generated to summarize attendance and registration data and to identify persons missing during the month or attending less than 15 hours in a month.

Quarterly reports will be generated on the data to give an overview of center activity. One quarterly report will take the same format as the federal performance report form. The other quarterly reports are inactivation reports based on cumulative data.

The annual cumulative performance report will be generated at the conclusion of the fiscal year. Preparations have been made to generate whichever report the federal government requires.

MONTHLY REPORT FOR PROGRAM MANAGERS (REPORT GENERATED MONTHLY)

Objectives:

To identify the participation patterns at the learning site.
To identify drop-outs from the program.
To identify potential drop-outs from the program.

Report Format

Totals:

Number of students
Number of student participating hours
Total number of active students
Total number of inactive students

Participation Patterns:

	No. of students	No. of Hours	Average Hrs.
1. by level			
2. by sex			
3. by sex and by level			
4. by age			
5. by age and by level			
6. by race			
7. by race and by level			
8. by first lanaguage			
9. by first langaage and by level			
10. by site			
11. by site and by level			
12. by city			
13. by city and by level			
14. by income source			
15. by income source and by level			
16. by teacher			
17. by time of day			
18. by time of day and by level			

Exception reports:

Active students who were missing for the entire month
Students who attended less than 15 hours

INACTIVATION PATTERNS/POSITIVE(REPORT GENERATED QUARTERLY)

Objectives:

To identify the positive patterns of inactivation.

Definition:

Students who inactivated for positive reasons as determined by the positive reasons in the Reason Left category of the student separation form.

To take a job
To take a better job
To enter another training program
Met personal objectives
Completed level
Received 8th Grade certificate
Achieved US citizenship
Enrolled in GED after taking ABE
Discontinued Public Assistance.

Report Format

Totals for each reason listed

Inactivation patterns broken down into categories as listed on the monthly report.

INACTIVATION PATTERNS/NEGATIVE (REPORT GENERATED QUARTERLY)

Objectives:

To identify the negative patterns of inactivation.

Definition:

Students who inactivated for negative reasons as determined by the negative reasons in the Reason Left category of the student separation form.

Lack of interest/program reasons
Health problems
Transportation problems
Child Care problems
Family Problems
Time Class is scheduled
Unknown Reasons
Moved.

Report Format

Totals for each reason listed.

Inactivation patterns broken down into categories as listed on the monthly report.

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